CONTINUOUSLY VARIABLE TRANSAXLE FLUID

REPLACEMENT [08/2013 -]

PROCEDURE

1. **REPLACE CONTINUOUSLY VARIABLE TRANSAXLE FLUID**

a. Lift the vehicle. [*1]

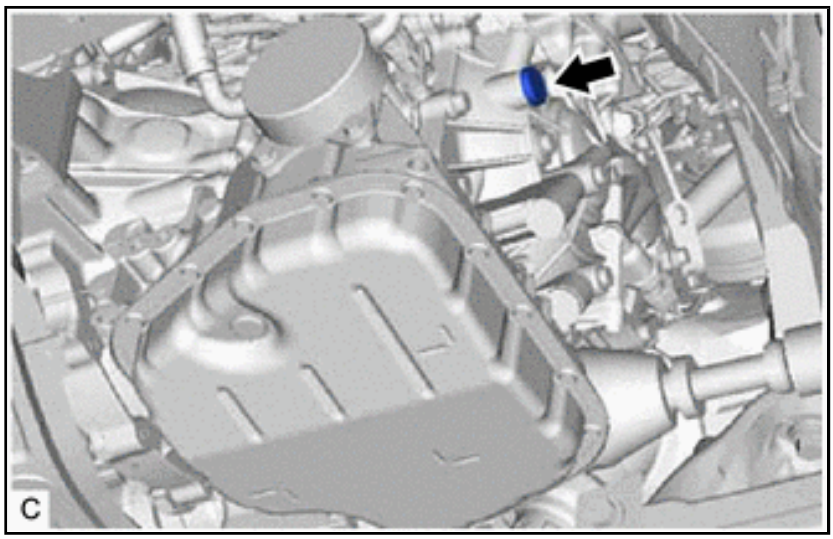
NOTE: **Set the vehicle on a lift so that the vehicle is kept level when it is lifted up (make sure that the tilt angle from the front to rear of the vehicle is within +/- 1Â°).**

b. Remove the engine under cover LH.

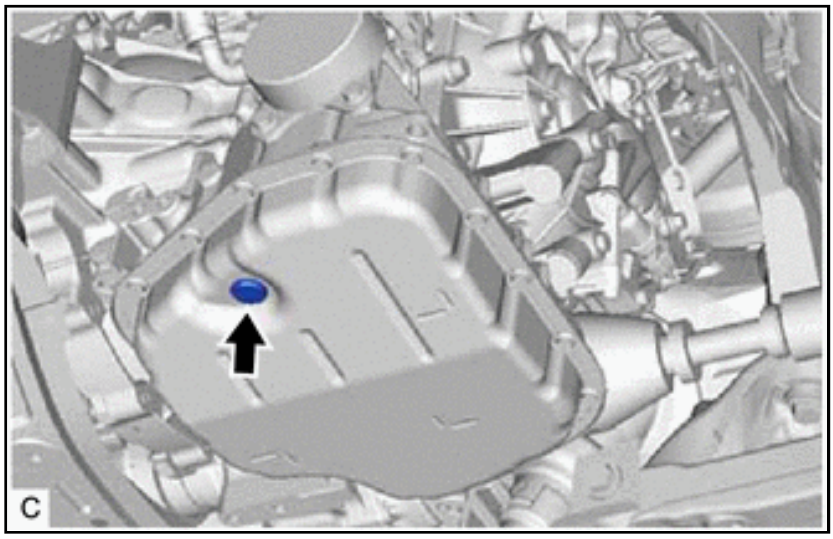
for 2ZR-FE: Refer to **PROCEDURE - Step 6**

for 2ZR-FAE: Refer to **PROCEDURE - Step 6**

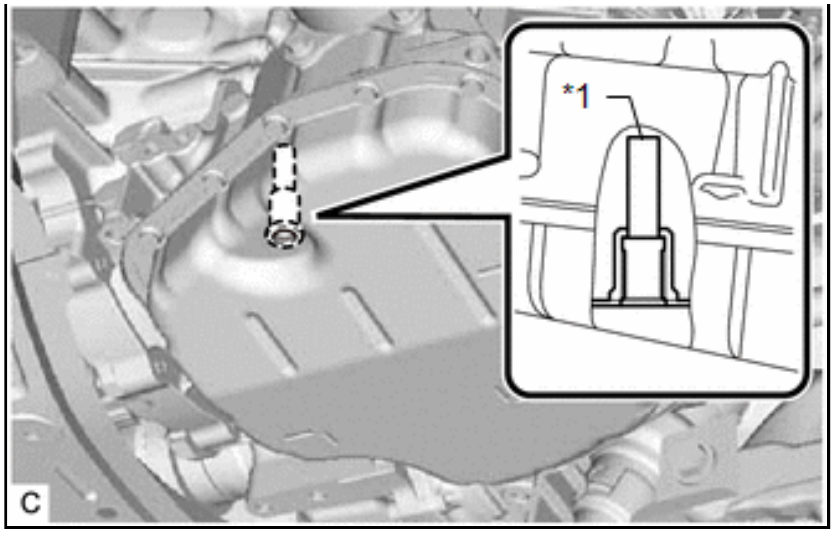
c. Remove the refill plug and gasket from the continuously variable transaxle assembly. [*2]



d. Using a 6 mm hexagon socket wrench, remove the overflow plug and gasket from the continuously variable transaxle assembly. [*3]

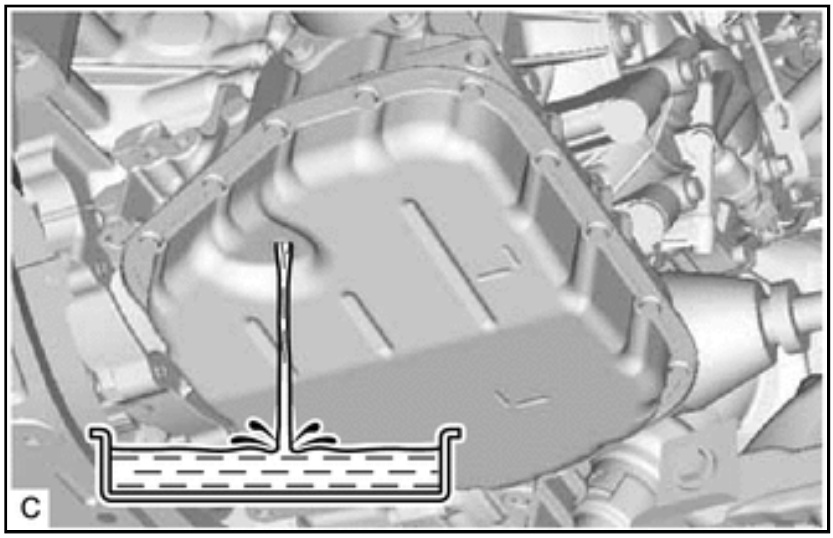


e. Using a 6 mm hexagon socket wrench, remove the No. 1 transmission oil filler tube from the transaxle oil (CVT) pan sub-assembly and drain the fluid. [*4]



*1	No. 1 Transmission Oil Filler Tube

f. Measure the amount of fluid drained. [*5]

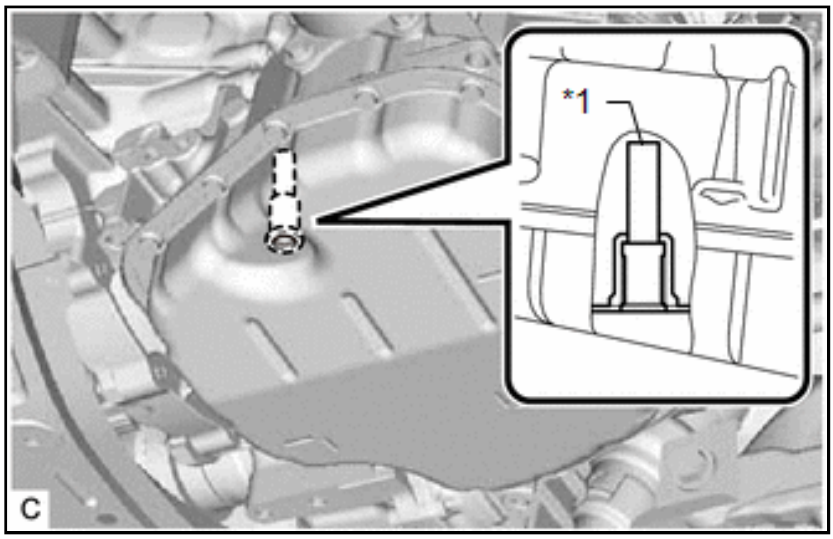


HINT:

Add the same amount of fluid in step [*8].

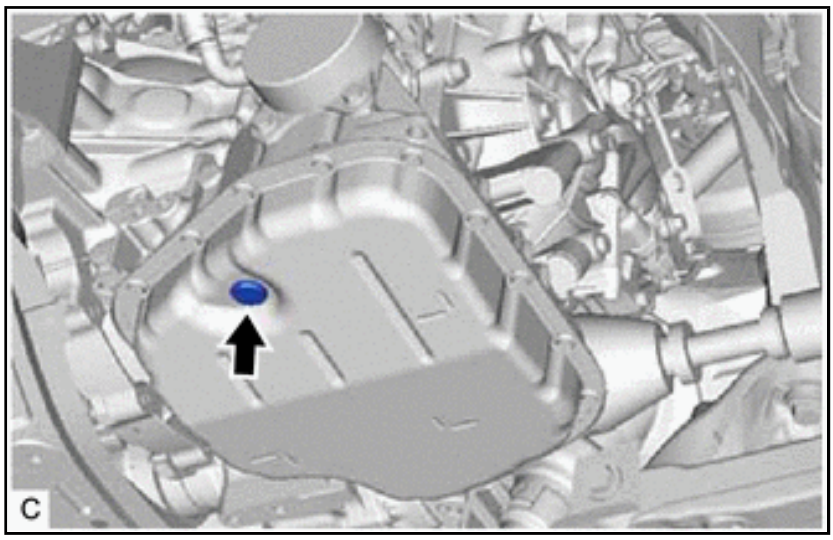
g. Using a 6 mm hexagon socket wrench, install the No. 1 transmission oil filler tube to the transaxle oil (CVT) pan sub-assembly. [*6]

Torque: 1.7 N*m (17 kgf*cm, 15 in.*lbf)



*1	No. 1 Transmission Oil Filler Tube

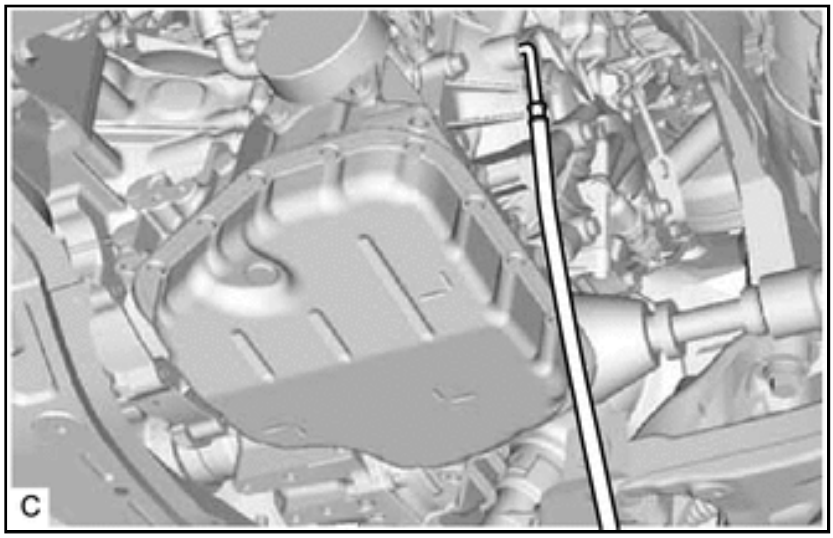
h. Temporarily install the gasket and overflow plug to the continuously variable transaxle assembly. [*7]



HINT:

Reuse the old gasket as the overflow plug will be removed again to adjust the fluid level.

i. Add fluid to the refill hole using the same amount of fluid drained in step [*5]. [*8]

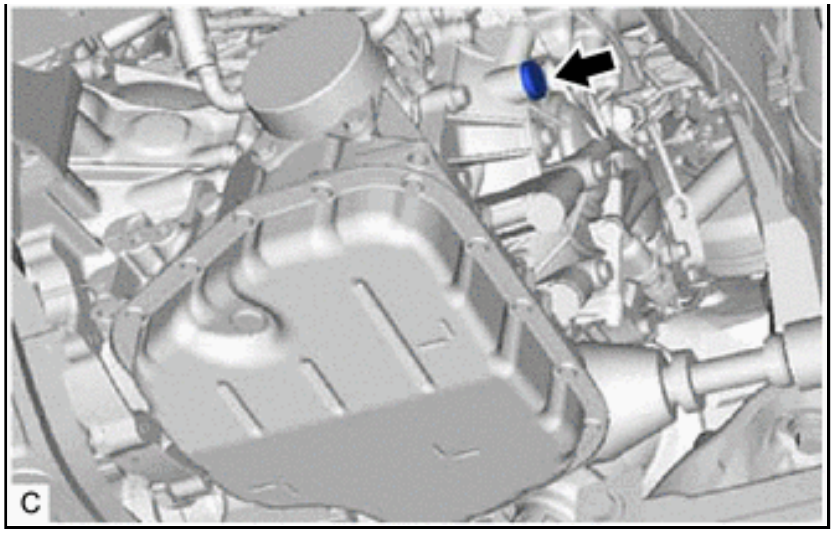


NOTE: **Use Toyota Genuine CVT fluid FE.**

j. Temporarily install the gasket and refill plug to avoid fluid spillage. [*9]

HINT:

Reuse the old gasket as the refill plug will be removed again to adjust the fluid level.



k. Lower the vehicle. [*10]
l. Start the engine. [*11]
m. Slowly move the shift lever from P to D, and then back to P (keep the shift lever in each position for approximately 3 seconds). [*12]

HINT:

Slowly move the shift lever to circulate the fluid through each part of the continuously variable transaxle assembly.

n. Allow the engine assembly to idle for 30 seconds to warm it up. [*13]
o. Turn the ignition switch off. [*14]
p. Repeat steps [*1] to [*14].
q. Repeat steps [*1] to [*10].

2. **ADJUST FLUID TEMPERATURE**

See step 6

3. **ADJUST FLUID LEVEL**

See step 7

4. **REBUILD WORK**

See step 8

ADJUSTMENT [08/2013 -]

PROCEDURE

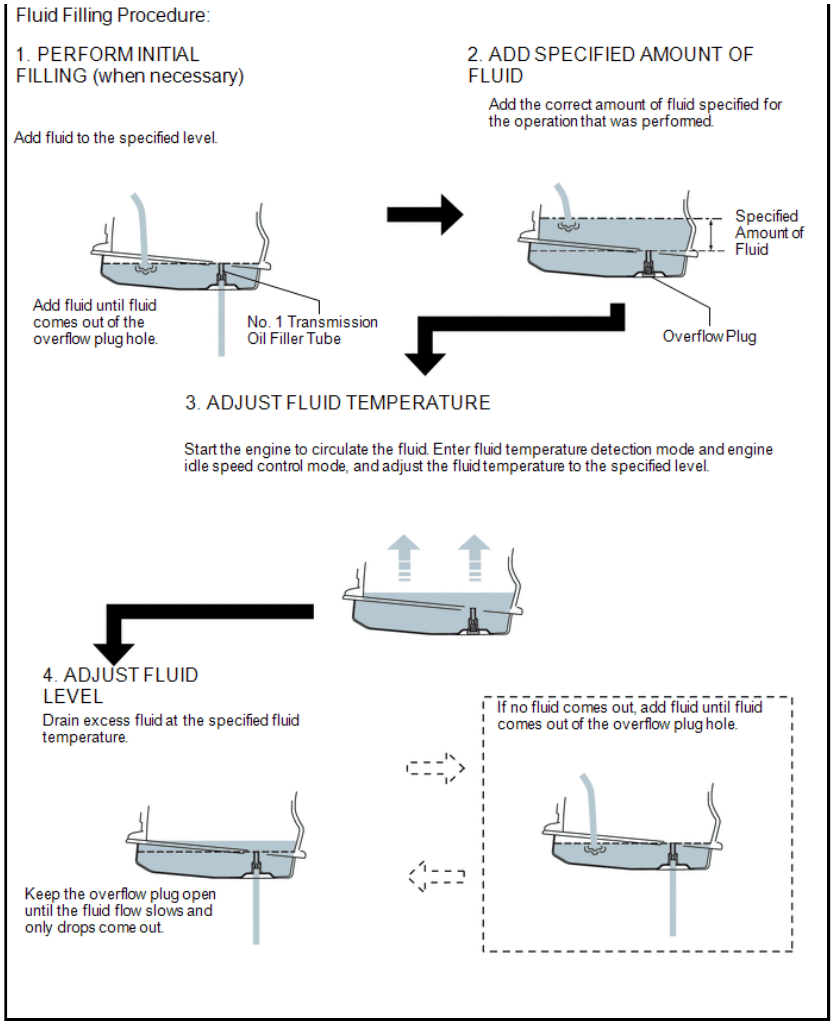
1. **PRECAUTIONS AND WORK DESCRIPTION**

a. The K313 continuously variable transaxle assembly does not have an oil filler tube or oil level gauge. When adding fluid, add fluid through the refill hole in the continuously variable transaxle assembly. The fluid level can be adjusted by draining excess fluid (allowing excess fluid to overflow) through the No. 1 transmission oil filler tube of the transaxle oil (CVT) pan sub-assembly.

HINT:

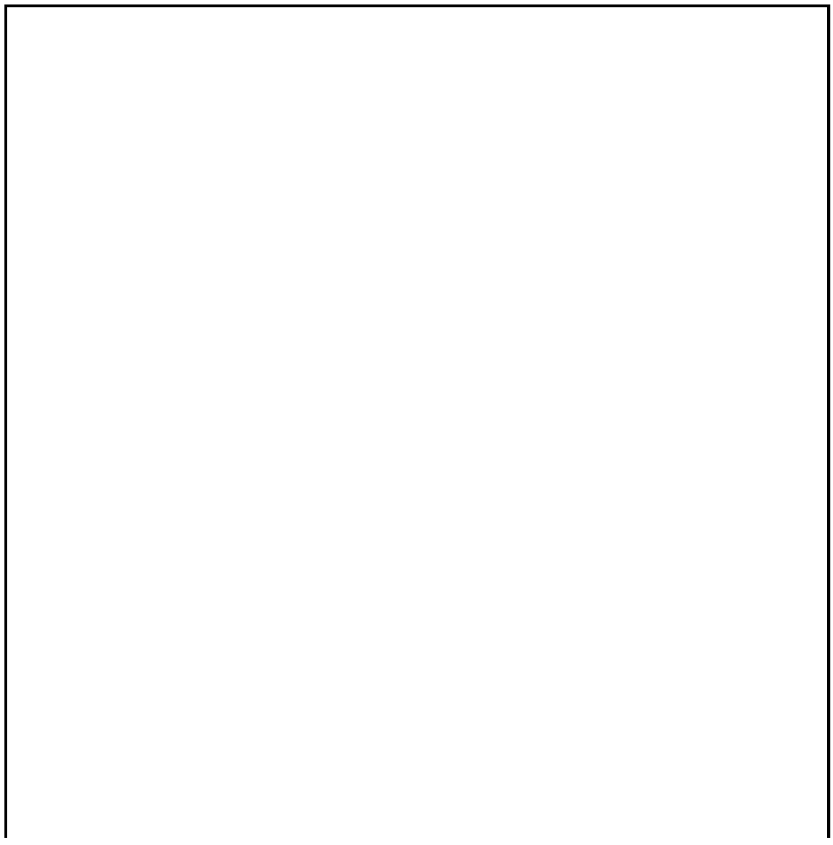
"Overflow" indicates the condition under which fluid comes out of the overflow plug hole.

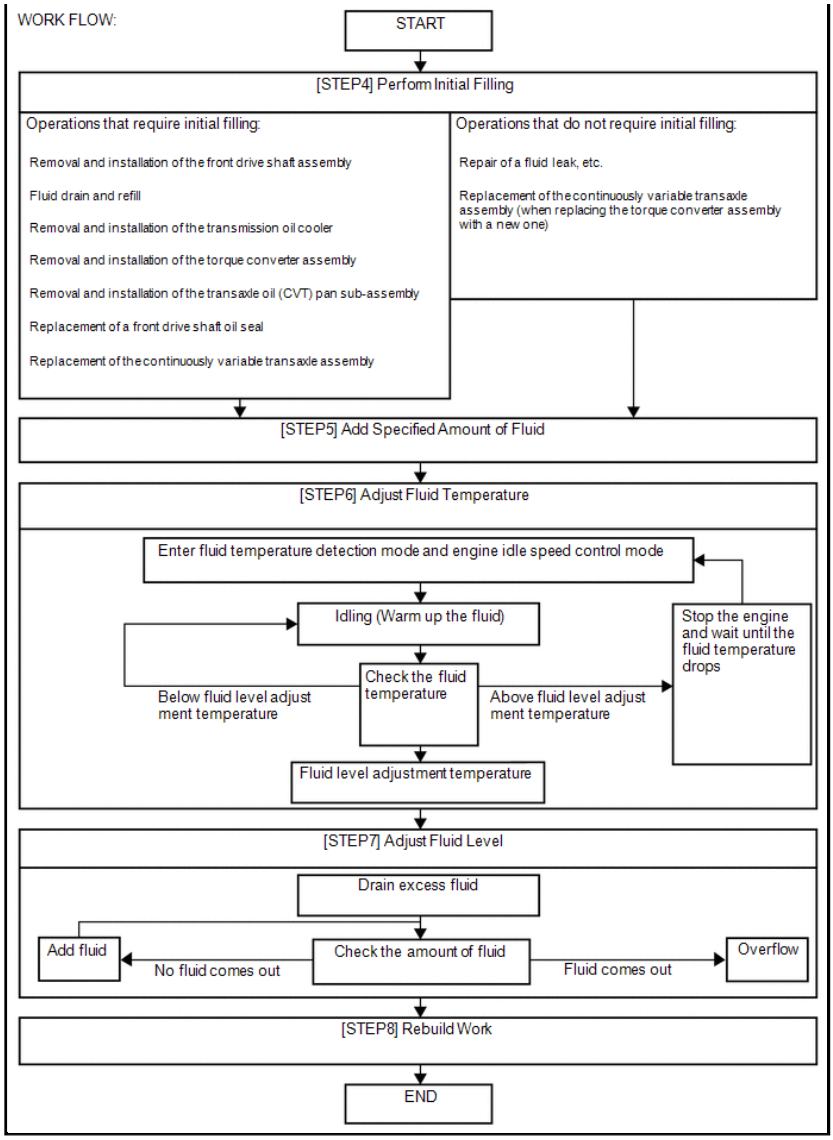
b. When adding fluid, add the specified amount of fluid while the engine assembly is cold. Then, warm up the engine assembly to circulate the fluid in the continuously variable transaxle assembly and adjust the fluid level with the engine idling at the specified fluid temperature.
c. The K313 continuously variable transaxle assembly requires Toyota Genuine CVT fluid FE.
d. When adjusting the fluid level, park the vehicle on level ground (make sure that the tilt angle from the front to rear of the vehicle is within +/-1Â°).
e. When adjusting the fluid level, turn off all electrical systems, such as the air conditioning, lighting system, electric fan and audio system, to reduce load.
f. The fluid temperature shown in the text is "A/T Oil Temperature 1" displayed on the Techstream.
g. Fluid level adjustment should be performed according to the following procedure and notes.



2. **WORK FLOW**

a. The adjustment should be performed according to the procedure referenced in the work flow below.





3. **PREPARATION WORK**

NOTE: **If the continuously variable transaxle assembly is hot (fluid temperature is high), wait until the fluid temperature becomes the same as the ambient temperature before starting the following procedure (recommended fluid temperature: approximately 20Â°C [68Â°F]).**

a. Lift the vehicle.

NOTE: **Set the vehicle on a lift so that the vehicle is kept level when it is lifted up (make sure that the tilt angle from the front to rear of the vehicle is within +/-1Â°).**

b. Remove the engine under cover LH.

for 2ZR-FE: Refer to **PROCEDURE - Step 6**

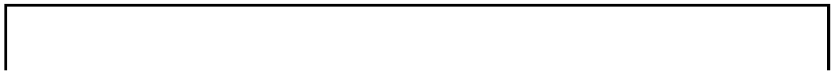
for 2ZR-FAE: Refer to **PROCEDURE - Step 6**

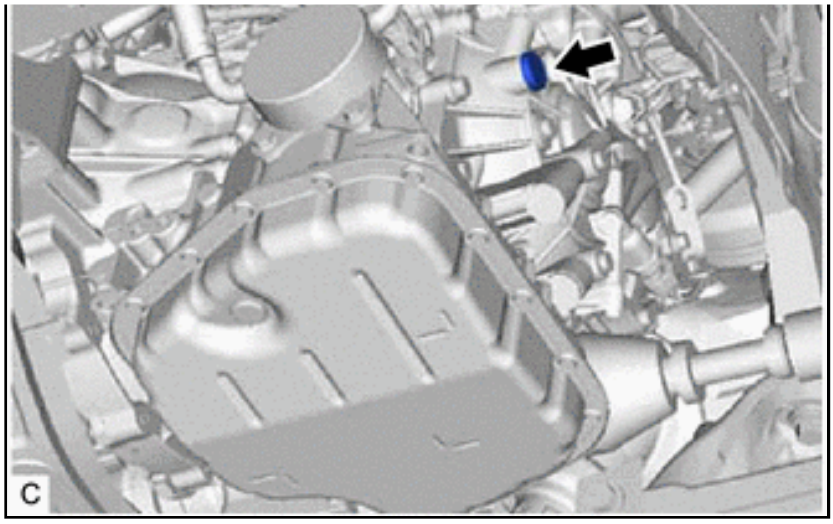
4. **PERFORM INITIAL FILLING**

NOTE: **After performing either of the following operations, it is not necessary to perform the initial filling procedure. Proceed to Add Specified Amount of Fluid (Step 5).**

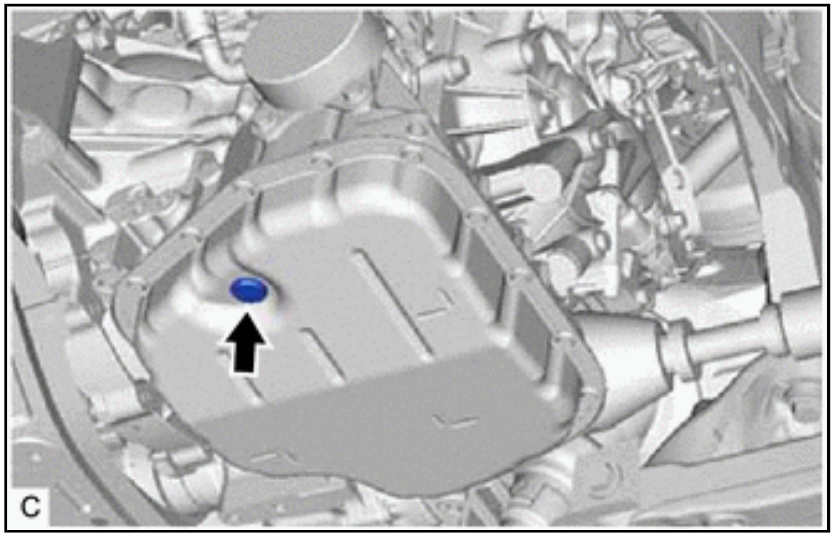
Operations that do not Require Initial Filling
• Repair of a fluid leak, etc. • Installation of a new continuously variable transaxle assembly (with new torque converter assembly).

a. Remove the refill plug and gasket from the continuously variable transaxle assembly.





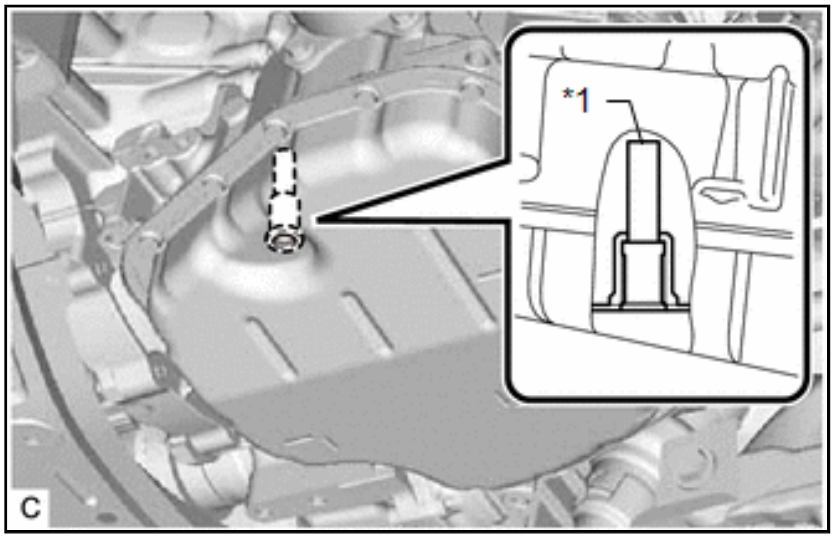
b. Using a 6 mm hexagon socket wrench, remove the overflow plug and gasket from the continuously variable transaxle assembly.



NOTE:

- **If fluid comes out after removing the overflow plug, wait until the fluid flow slows and only drops come out.**
- **If fluid comes out, it is not necessary to perform the initial filling procedure. After checking the tightening torque of the No. 1 transmission oil filler tube, temporarily install the overflow plug.**

c. Using a 6 mm hexagon socket wrench, check that the No. 1 transmission oil filler tube is tightened to the specified torque.



*1	No. 1 Transmission Oil Filler Tube

Torque: 1.7 N*m (17 kgf*cm, 15 in.*lbf)

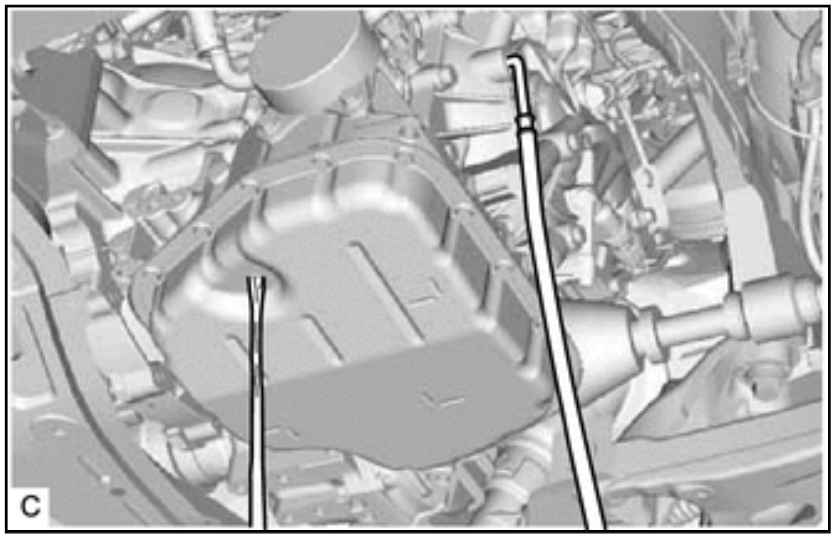
NOTE: **If the No. 1 transmission oil filler tube is not tightened to the specified torque, the amount of fluid cannot be precisely adjusted.**

HINT:

To check the torque of the No. 1 transmission oil filler tube, insert the hexagon socket wrench into the overflow plug hole.

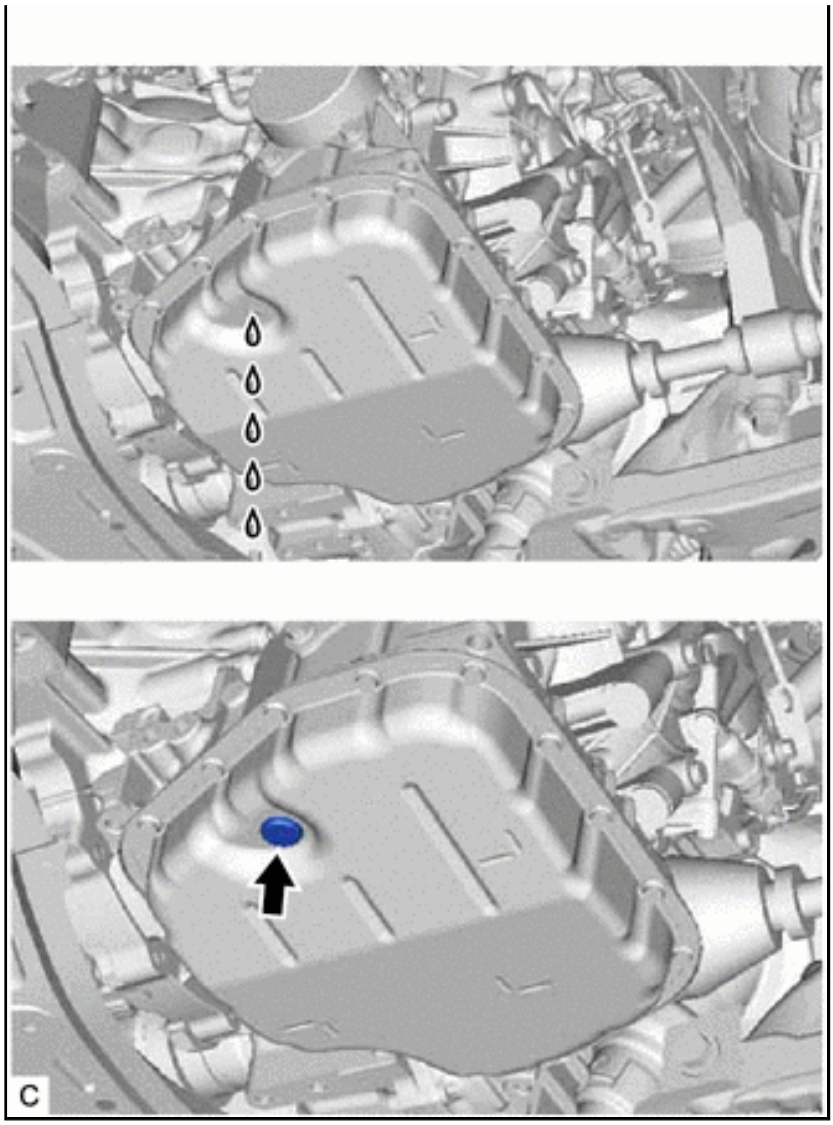
d. Perform initial filling.

1. Add fluid to the refill hole until it flows out of the overflow plug hole.



NOTE: **Use Toyota Genuine CVT fluid FE.**

e. Wait until the fluid flow slows and only drips come out.

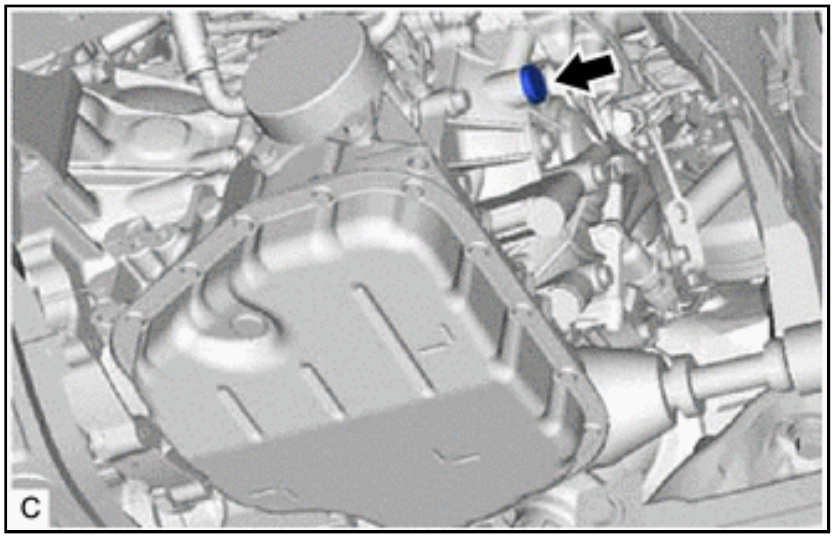


f. Temporarily install the gasket and overflow plug to the continuously variable transaxle assembly.

HINT:

Reuse the old gasket as the overflow plug will be removed again to adjust the fluid level.

g. Temporarily install the gasket and refill plug to the continuously variable transaxle assembly.

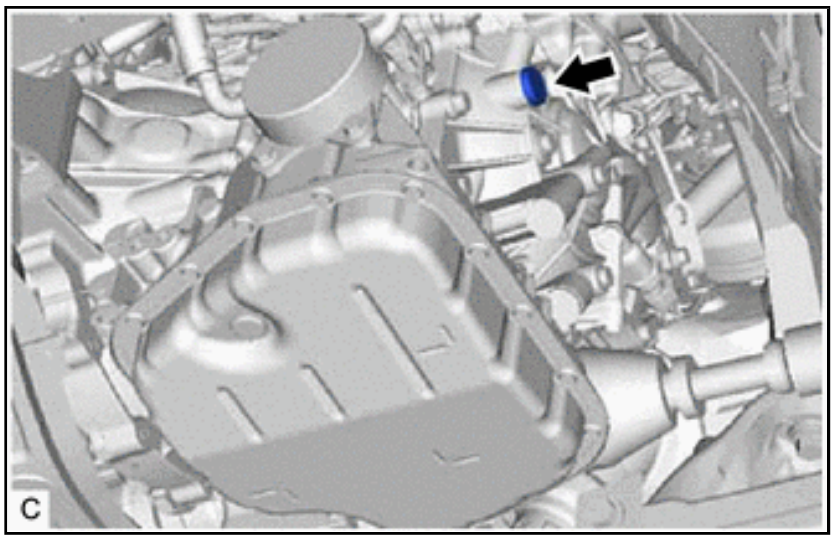


HINT:

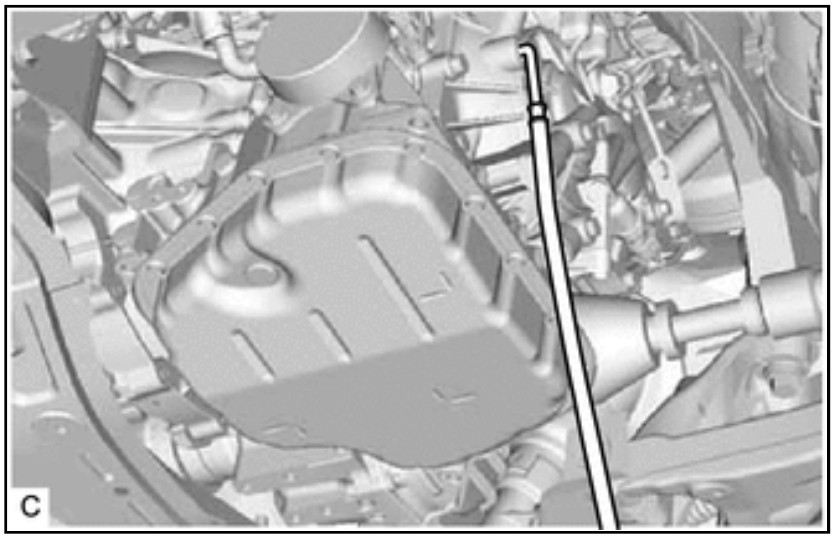
Reuse the old gasket as the refill plug will be removed again to adjust the fluid level.

5. **ADD SPECIFIED AMOUNT OF FLUID**

a. Remove the refill plug and gasket from the continuously variable transaxle assembly (when initial filling was not performed).



b. Add fluid to the refill hole using the correct amount of fluid as listed in the table below.

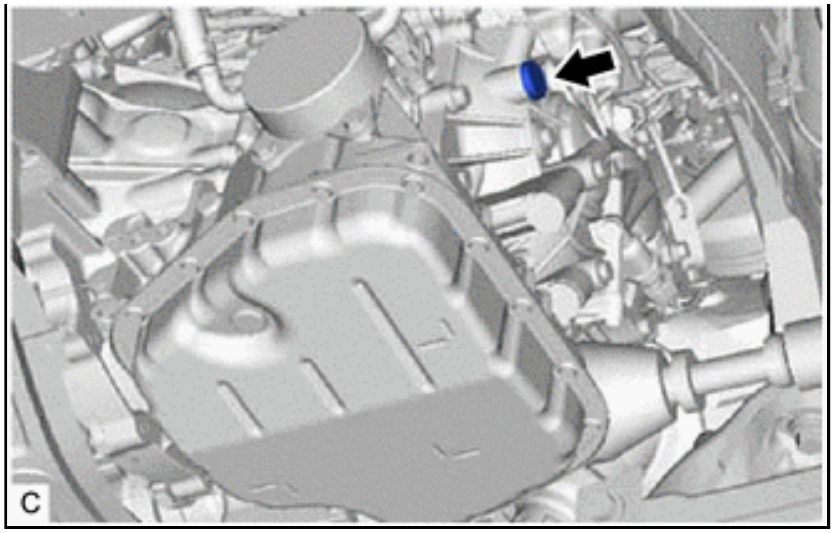


NOTE: **The refill amount differs depending on the operation that was performed.**

Standard Capacity

Operation Performed	Fill Amount
Installation of the continuously variable transaxle assembly with torque converter assembly	3.2 liters (3.4 US qts, 2.8 Imp. qts.)
Replacement of the continuously variable transaxle assembly (when replacing the torque converter assembly with a new one)	3.0 liters (3.2 US qts, 2.6 Imp. qts.)
Replacement of the torque converter assembly	2.7 liters (2.9 US qts, 2.4 Imp. qts.)
Replacement of the continuously variable transaxle assembly (when reusing the torque converter assembly)	
Removal and installation of the torque converter assembly	2.3 liters (2.4 US qts, 2.0 Imp. qts.)
Removal and installation of the front drive shaft assembly	1.2 liters (1.3 US qts, 1.1 Imp. qts.)
Fluid drain and refill	
Removal and installation of the transmission oil cooler	
Removal and installation of the transaxle oil (CVT) pan sub-assembly	
Replacement of the front drive shaft oil seal	
Repair of a fluid leak, etc.	0.4 liters (0.4 US qts, 0.4 Imp. qts.)

c. Temporarily install the gasket and refill plug to avoid fluid spillage.



HINT:

Reuse the old gasket as the refill plug will be removed again to adjust the fluid level.

d. Lower the vehicle.

6. **ADJUST FLUID TEMPERATURE**

a. When using the Techstream:

1. Connect the Techstream to the DLC3 with the ignition switch off.
2. Turn the ignition switch to ON and turn the Techstream on.
3. Enter the following menus: Powertrain / Engine and ECT / Active Test / Connect the TC and TE1.

Powertrain > Engine and ECT > Active Test

Tester Display
Connect the TC and TE1

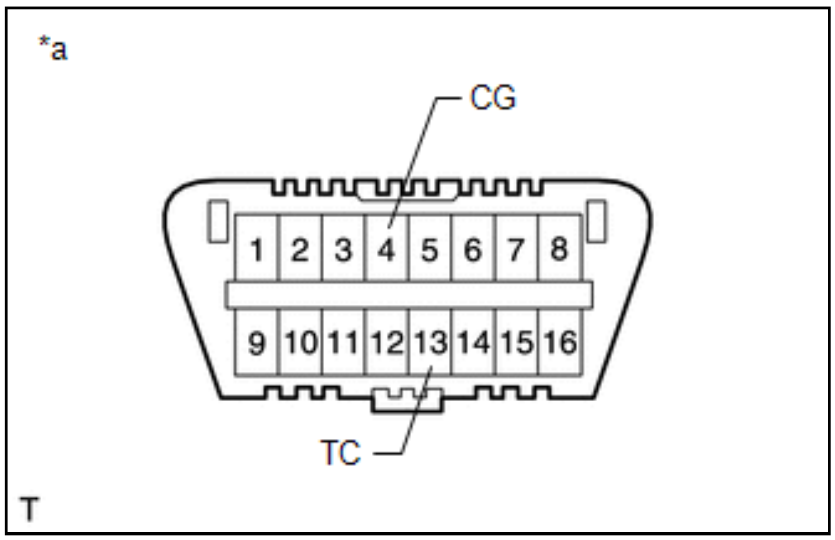
4. Select the Data List item: A/T Oil Temperature 1.
5. According to the display on the Techstream, perform the Active Test "Connect the TC and TE1 / ON".

HINT:

The indicator lights on the combination meter blink to indicate that a DTC has been stored when the Active Test "Connect the TC and TE1 / ON" is performed.

b. When not using the Techstream:

1. Using SST, connect terminals 13 (TC) and 4 (CG) of the DLC3 with the ignition switch off.



*a	Front view of DLC3

- **SST: 09843-18040**

c. Depress and hold the brake pedal.

d. Start the engine.

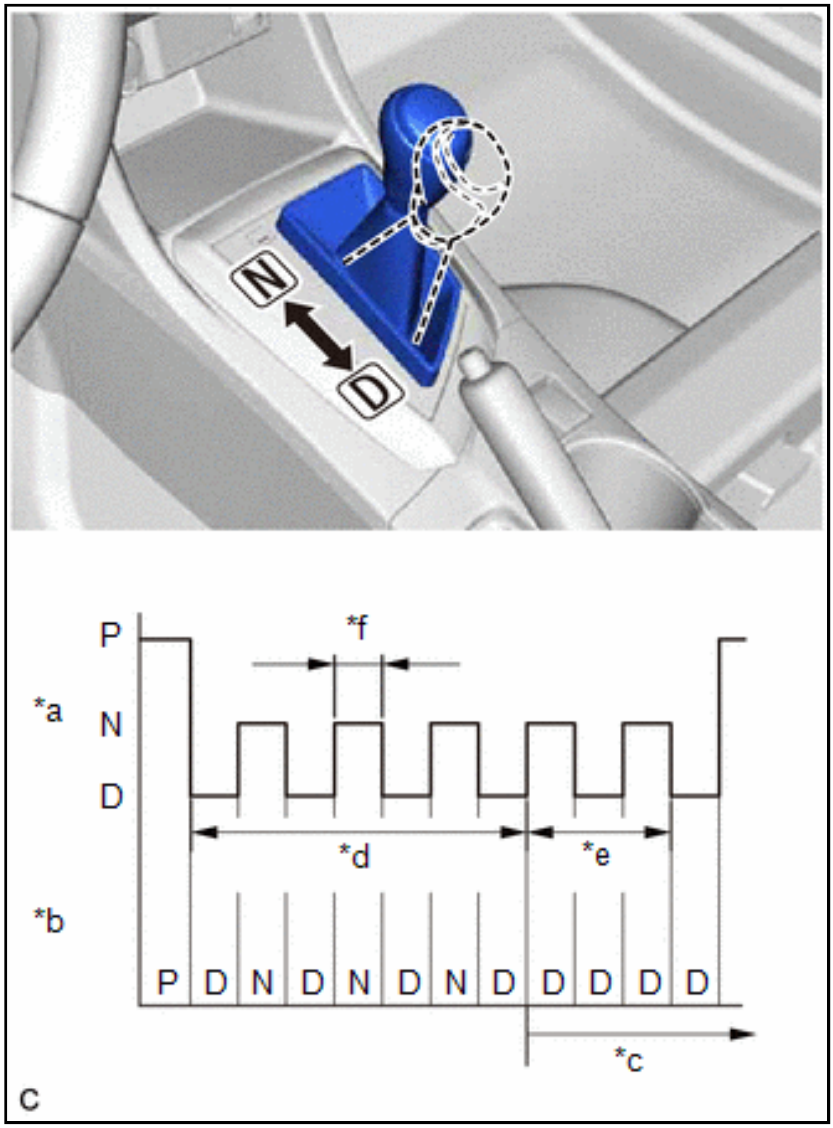
NOTE: **To reduce load, make sure that all electrical systems, such as the air conditioning, lighting system, electric fan and audio system, are off.**

e. Slowly move the shift lever from P to D, and then back to P (keep the shift lever in each position for approximately 3 seconds).

HINT:

Slowly move the shift lever to circulate the fluid through each part of the continuously variable transaxle assembly.

f. While observing the D shift indicator on the combination meter, move the shift lever back and forth between N and D at an interval of less than 1.5 seconds for 6 seconds or more.



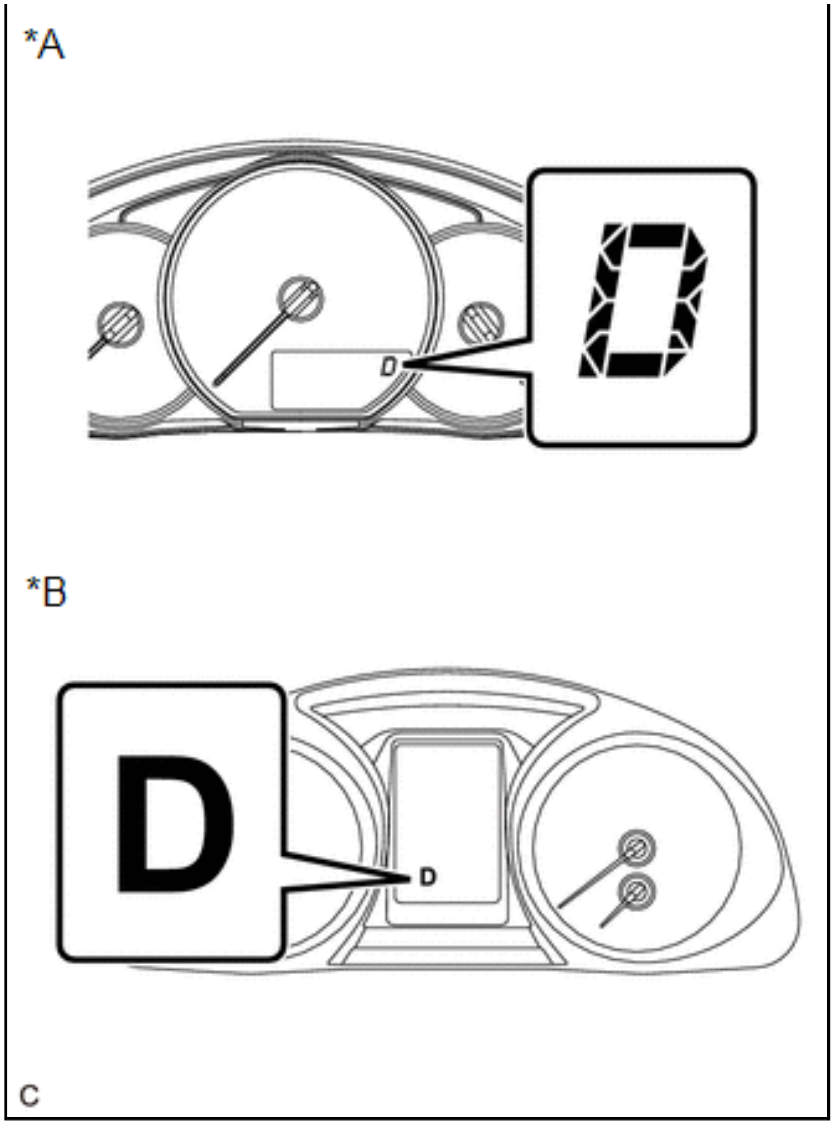
*a	Shift Position
*b	Indication of Shift Position
*c	Fluid Temperature Detection Mode
*d	6 sec. or more
*e	2 sec.
*f	Less than 1.5 sec.

NOTE: **Do not pause for more than 1.5 seconds.**

HINT:

Performing this operation will cause the vehicle to enter fluid temperature detection mode.

g. Check that the D shift indicator comes on for 2 seconds.



*A	Standard Type
*B	Sport Type

HINT:

- When fluid temperature detection mode is activated, the D shift indicator on the combination meter comes on for 2 seconds.
- If the D shift indicator does not come on for 2 seconds, return to the first step and perform the procedure again.

h. Move the shift lever to P.

i. Release the brake pedal.

j. Disconnect the terminals of the DLC3.

1. When using the Techstream:
   - According to the display on the Techstream, perform the Active Test "Connect the TC and TE1 / OFF".
2. When not using the Techstream:
   - Remove SST from terminals 13 (TC) and 4 (CG).

NOTE: **Make sure that terminals 13 (TC) and 4 (CG) are not connected. If the terminals are connected, the fluid level cannot be precisely adjusted due to fluctuations in engine speed.**

HINT:

- Disconnecting the terminals activates engine idle speed control mode.
- In engine idle speed control mode, engine idle speed control starts when the fluid temperature reaches the specified value and the engine speed is maintained.
- Even after the terminals are disconnected, fluid temperature detection mode remains active until the ignition switch is turned off.

k. Adjust the fluid temperature to the fluid level adjustment temperature.

1. Check the fluid temperature by monitoring the D shift indicator.

HINT:

- In fluid temperature detection mode, the D shift indicator comes on, goes off, or blinks depending on the fluid temperature.

- The fluid filling procedure should be performed when the D shift indicator is on (the fluid temperature is within the fluid level adjustment temperature range).

2. Adjust the fluid temperature.
   - If the D shift indicator is off [Below Fluid Level Adjustment Temperature: 35Â°C (95Â°F) or less]: Warm up the engine with the engine idling in engine idle speed control mode until the D shift indicator turns on.
   - If the D shift indicator is on [Fluid Level Adjustment Temperature: 35 to 45Â°C (95 to 113Â°F)]: Immediately proceed to Adjust Fluid Level (Step 7).
   - If the D shift indicator is blinking [Above Fluid Level Adjustment Temperature: 45Â°C (113Â°F) or more]: Stop the engine and wait until the fluid temperature drops to 35Â°C (95Â°F) or less (the D shift indicator goes off). Then perform the adjust fluid temperature procedure again from the beginning.

Relationship between Fluid Level Adjustment Temperature and the D Shift Indicator

Â	Below Fluid Level Adjustment Temperature	Fluid Level Adjustment Temperature	Above Fluid Level Adjustment Temperature
Fluid Temperature ("A/T Oil Temperature 1" displayed on the Techstream)	35Â°C (95Â°F) or less	35 to 45Â°C (95 to 113Â°F)	45Â°C (113Â°F) or more
D Shift Indicator	Off	On	Blinks

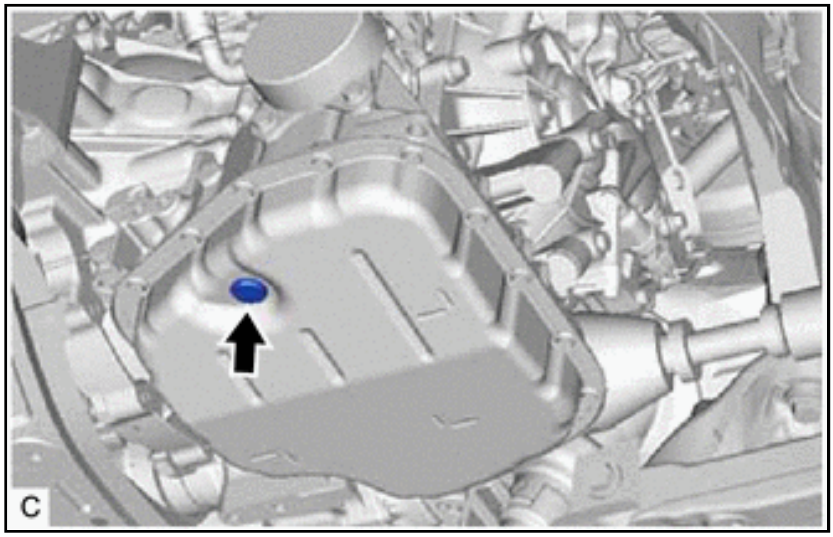
7. **ADJUST FLUID LEVEL**

WARNING: **Use caution while the engine assembly is idling and the radiator fan is operating.**

a. Lift the vehicle.

NOTE: **Set the vehicle on a lift so that the vehicle is kept level when it is lifted up (make sure that the tilt angle from the front to rear of the vehicle is within +/-1Â°).**

b. Using a 6 mm hexagon socket wrench, remove the overflow plug and gasket from the continuously variable transaxle assembly.



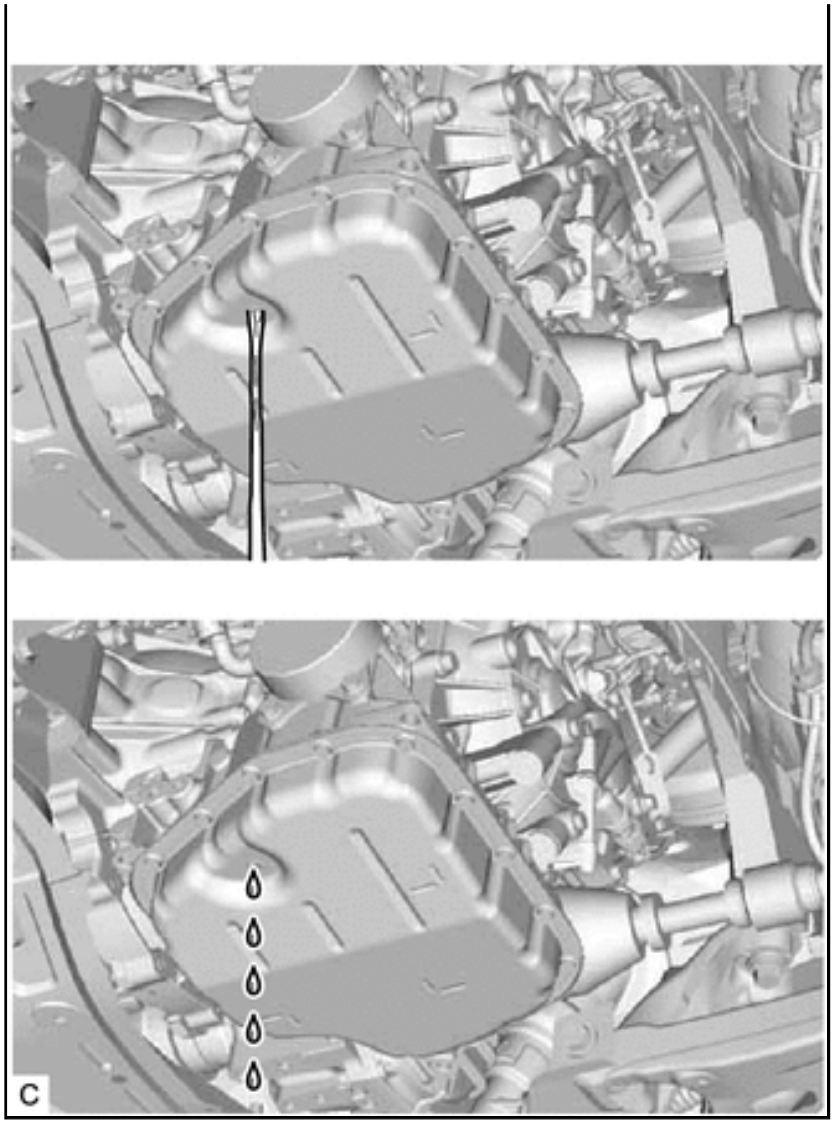
WARNING: **Be careful as the fluid coming out of the overflow plug hole is hot.**

c. Check the amount of fluid that comes out of the overflow plug hole.
- If the amount of fluid that comes out of the overflow plug hole is large, proceed to *1.
- If no fluid comes out of the overflow plug hole, proceed to *2.

NOTE: **If only a small amount of fluid (approximately 5 cc) comes out of the overflow plug hole, then only fluid remaining in the No. 1 transmission oil filler tube has come out. This is not considered to be overflow.**

d. *1:

If the amount of fluid that comes out of the overflow plug hole is large, wait until the fluid flow slows and only drips come out.

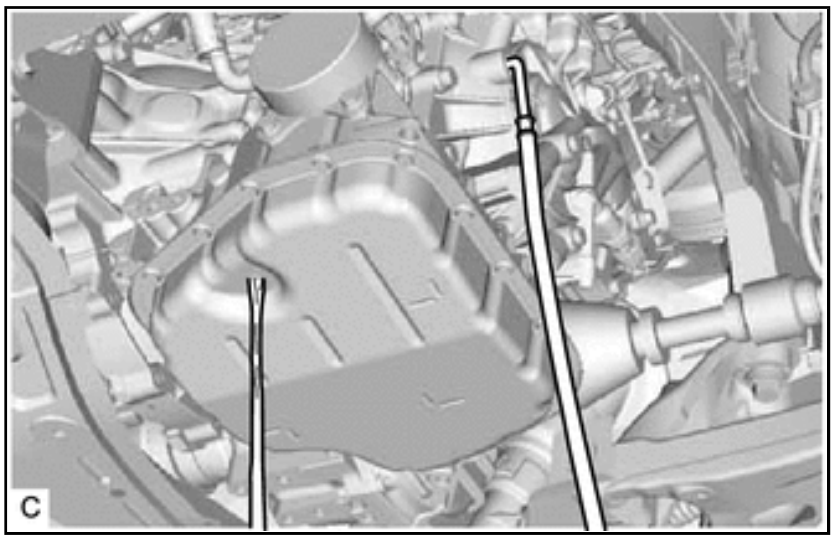


HINT:

The fluid flow will not stop completely because the fluid continues to expand as its temperature increases.

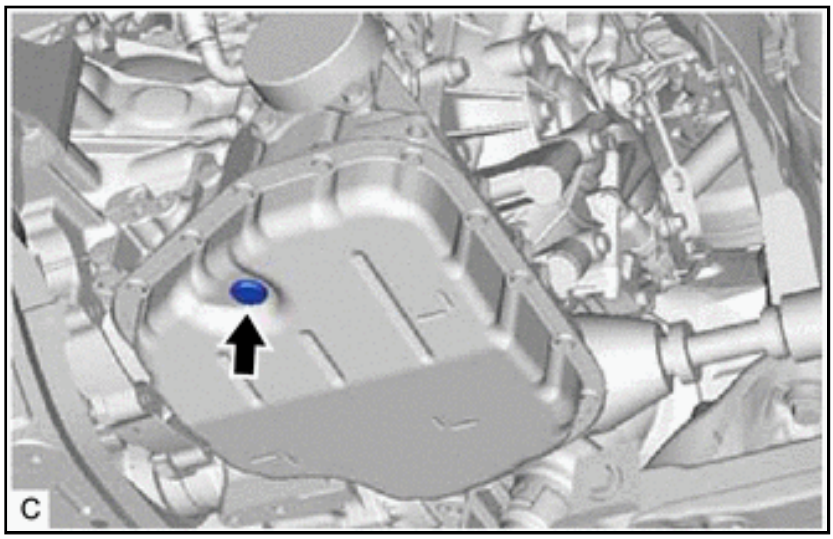
e. *2:

If no fluid comes out of the overflow plug hole, remove the refill plug and gasket. Then add fluid through the refill hole until fluid comes out of the overflow plug hole. Wait until the fluid flow slows and only drips come out.



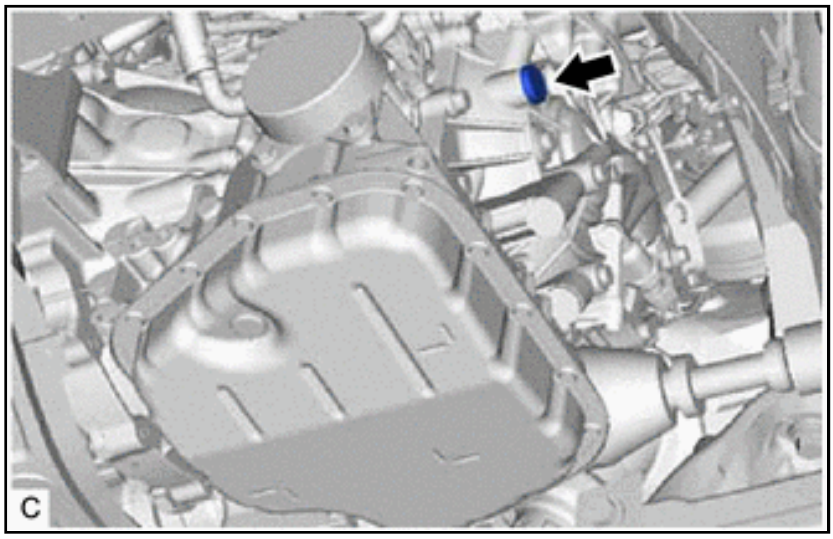
NOTE: **Use Toyota Genuine CVT fluid FE.**

f. Install a new gasket and the overflow plug to the continuously variable transaxle assembly.



Torque: 40 N*m (408 kgf*cm, 30 ft.*lbf)

g. Install a new gasket and the refill plug to the continuously variable transaxle assembly.



Torque: 49 N*m (500 kgf*cm, 36 ft.*lbf)

h. Lower the vehicle.

i. Turn the ignition switch off.

HINT:

Turning the ignition switch off exits fluid temperature detection mode.

j. Remove the Techstream from the DLC3 (when using the Techstream).

8. **REBUILD WORK**

a. Lift the vehicle.

b. Clean each part.

c. Check for fluid leaks.

d. Install the engine under cover LH.

for 2ZR-FE: Refer to **PROCEDURE - Step 84** Refer to **PROCEDURE - Step 84**

for 2ZR-FAE: Refer to **PROCEDURE - Step 58** Refer to **PROCEDURE - Step 58**

e. Lower the vehicle.